interim—between July 5, 2022, and September 21, 2022—when the 2019 regulations became vacated and the pre-2019 regulations therefore governed, the 2019 regulations are now in effect and govern listing and critical habitat decisions (*see Center for Biological Diversity* v. *Haaland,* No. 4:19–cv–05206–JST, Doc. 168 (N.D. Cal. July 5, 2022) (*CBD* v. *Haaland*) (vacating the 2019 regulations and thereby reinstating the pre-2019 regulations)) and *In re: Cattlemen's Ass'n,* No. 22–70194 (9th Cir. Sept. 21, 2022) (staying the vacatur of the 2019 regulations and thereby reinstating the 2019 regulations until a pending motion for reconsideration before the district court is resolved)).

The Act defines an ''endangered species'' as a species that is in danger of extinction throughout all or a significant portion of its range, and a ''threatened species'' as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether any species is an endangered species or a threatened species because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term ''threat'' to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term ''threat'' includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term ''threat'' may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an ''endangered species'' or a ''threatened species.'' In determining whether a species meets either definition, we must evaluate all identified threats by considering the species' expected response and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an ''endangered species'' or a ''threatened species'' only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term ''foreseeable future,'' which appears in the statutory definition of ''threatened species.'' Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term ''foreseeable future'' extends only so far into the future as we can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. ''Reliable'' does not mean ''certain''; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

Analytical Framework

The SSA report documents the results of our comprehensive biological review of the best scientific and commercial data regarding the status of the species, including an assessment of the potential threats to the species. The SSA report does not represent our decision on whether the species should be listed as an endangered or threatened species under the Act. However, it does provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket FWS–R2–ES–2021–0015 on *https://www.regulations.gov.*

To assess lesser prairie-chicken viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We use this information to inform our regulatory decision.

Summary of Biological Status and Threats

In this discussion, we review the biological condition of the species and

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percent cultivated grains may not support stable lesser prairie-chicken populations (Crawford and Bolen 1976a, p. 102). More recently, abundances of lesser prairie-chicken increased with increasing cropland until a threshold of 10 percent was reached; after that, abundance of lesser prairie-chicken declined with increasing cropland cover (Ross et al. 2016b, entire). While lesser prairie-chicken may forage in agricultural croplands, croplands do not provide for the habitat requirements of the species' life cycle (cover for nesting and thermoregulation); thus, lesser prairie-chicken avoid landscapes dominated by cultivated agriculture, particularly where small grains are not the dominant crop (Crawford and Bolen 1976a, p. 102).

As part of the geospatial analysis completed for the SSA, we estimated the amount of cropland that currently exists in the four ecoregions of the lesser prairie-chicken. These percentages do not equate to the actual proportion of habitat loss in the analysis area because not all of the analysis area was necessarily suitable lesser prairie-chicken habitat; they are only the estimated portion of the total analysis area converted from the native vegetation community, *i.e.,* grassland, to cropland. About 37 percent of the total area in the Short-Grass/CRP Ecoregion; 32 percent of the total area in the Sand Sagebrush Ecoregion; 13 percent of the total area in the Mixed-Grass Ecoregion; and 14 percent of the total area in the Shinnery Oak Ecoregion have been converted to cropland in the analysis area of the lesser prairie-chicken. Rangewide, we estimate about 4,963,000 ac (2,009,000 ha) of grassland have been converted to cropland, representing about 23 percent of the total analysis area. We note that these calculations do not account for all conversion that has occurred within the historical range of the lesser prairie-chicken but are limited to the amount of cropland within our analysis area. For further information, including total acreages impacted, see the SSA report for the lesser prairie-chicken (Service 2022, appendix E and figure E.1).

The effects of grassland converted to cropland within the historical range of the lesser prairie-chicken have significantly impacted the amount of habitat available and how fragmented the remaining habitat is for the lesser prairie-chicken, leading to overall decreases in resiliency and redundancy throughout the range of the lesser prairie-chicken. The impact of cropland has shaped the historical and current condition of the grasslands and shrublands upon which the lesser prairie-chicken depends.

Petroleum and Natural Gas Production

Petroleum and natural gas production has occurred over much of the estimated historical and current range of the lesser prairie-chicken. As demand for energy has continued to increase nationwide, so has oil and gas development in the Great Plains. In Texas, for example, one study noted that from 2002–2012 active oil and gas wells in the lesser prairie-chicken occupied range increased by more than 80 percent (Timmer et al. 2014, p. 143). The impacts from oil and gas development extend beyond the immediate well sites; they involve activities such as surface exploration, exploratory drilling, field development, and facility construction, as well as access roads, well pads, and operation and maintenance. Associated facilities can include compressor stations, pumping stations, and electrical generators.

Petroleum and natural gas production result in both direct and indirect habitat effects to the lesser prairie-chicken (Hunt and Best 2004, p. 92). Well pad construction, seismic surveys, access road development, power line construction, pipeline corridors, and other activities can all result in direct habitat loss by removal of vegetation used by lesser prairie-chickens. As documented in other grouse species, indirect habitat loss also occurs from avoidance of vertical structures, noise, and human presence (Weller et al. 2002, entire), which all can influence lesser prairie-chicken behavior in the general vicinity of oil and gas development areas. These activities also disrupt lesser prairie-chicken reproductive behavior (Hunt and Best 2004, p. 41).

Anthropogenic features, such as oil and gas wells, affect the behavior of lesser prairie-chickens and alter the way in which they use the landscape (Hagen et al. 2011, pp. 69–73; Pitman et al. 2005, entire; Hagen 2010, entire; Hunt and Best 2004, pp. 99–104; Plumb et al. 2019, pp. 224–227; Sullins et al. 2019, pp. 5–8; Peterson et al. 2020, entire). Please see the SSA report for a detailed summary of the best available scientific information regarding avoidance distances and effects of oil and gas development on lesser prairie-chicken habitat use (Service 2022, pp. 27–28).

As part of the geospatial analysis discussed in the SSA report, we calculated the amount of usable land cover for the lesser prairie-chicken that has been impacted (both direct and indirect impacts) by oil and natural gas wells in the current analysis area of the lesser prairie-chicken, though this analysis did not include all associated infrastructure as those data were not available. We used an impact radius of 984 feet (ft) (300 meters (m)) for indirect effects of oil and gas wells. For details regarding the establishment of the impact radius, see appendix B, part 2C, of the SSA report (Service 2022). These calculations were limited to the current analysis area and do not include historical impacts of habitat loss that occurred outside of the current analysis area. Thus, the calculation likely underestimates the rangewide effects of historical oil and gas development on the lesser prairie-chicken. About 4 percent of the total area in the Short-Grass/CRP Ecoregion; 5 percent of the total area in the Sand Sagebrush Ecoregion; about 10 percent of the total area in the Mixed-Grass Ecoregion; and 4 percent of the total area in the Shinnery Oak Ecoregion of space that was identified as potential usable or potential restorable areas have been impacted due to oil and gas development in the current analysis area of the lesser prairie-chicken. Rangewide, we estimate about 1,433,000 ac (580,000 ha) of grassland have been lost due to oil and gas development representing about 7 percent of the total analysis area. Maps of these areas in each ecoregion are provided in the SSA report (Service 2022, appendix E, figure E.2).

Oil and gas development directly removes habitat that supports lesser prairie-chicken, and the effects of the development extend past the immediate site of the wells and their associated infrastructure, further impacting habitat and altering behavior of lesser prairie-chicken throughout both the Northern and the Southern DPS. These activities have resulted in decreases in population resiliency and species redundancy.

Wind Energy Development and Power Lines

Wind power is a form of renewable energy increasingly being used to meet current and projected future electricity demands in the United States. Much of the new wind energy development is likely to come from the Great Plains States because they have high wind resource potential, which exerts a strong, positive influence on the amount of wind energy developed within a particular State (Staid and Guikema 2013, p. 384). In 2019, three of the five States within the lesser prairie-chicken range (Colorado, New Mexico, and Kansas) were within the top 10 States nationally for fastest growing States for wind generation in the past year (AWEA 2020, p. 33). There is considerable information (Southwest Power Pool

2020) indicating interest by the wind industry in developing wind energy within the range of the lesser prairie-chicken, especially if additional transmission line capacity is constructed. As of May 2020, approximately 1,792 wind turbines were located within the lesser prairie-chicken analysis area (Hoen et al. 2020). Not all areas within the analysis area are habitat for the lesser prairie-chicken, so not all turbines located within the analysis area affect the lesser prairie-chicken and its habitat.

The average size of installed wind turbines and all other size aspects of wind energy development continues to increase (DOE 2015, p. 63; AWEA 2020, p. 87–88; AWEA 2014, entire; AWEA 2015, entire; AWEA 2016, entire; AWEA 2017, entire; AWEA 2018, entire; AWEA 2019, entire; AWEA 2020, entire). Wind energy developments range from 20 to 400 towers, each supporting a single turbine. The individual permanent footprint of a single turbine unit, about 0.75–1 ac (0.3–0.4 ha), is relatively small in comparison with the overall footprint of the entire array (DOE 2008, pp. 110–111). Roads are necessary to access the turbine sites for installation and maintenance. Depending on the size of the wind energy development, one or more electrical substations, where the generated electricity is collected and transmitted on to the power grid, may also be built. Considering the initial capital investment and that the service life of a single turbine is at least 20 years (DOE 2008, p. 16), we expect most wind energy developments to be in place for at least 30 years. Wind repowering is the combined activity of dismantling or refurbishing existing wind turbines and commissioning new ones at existing wind energy development sites at the end of their service life. Wind repowering is increasingly common, with 2,803 megawatts of operating projects partially repowering in 2019 (AWEA 2020, p. 2).

Please see the SSA report for a detailed review of the best available scientific information regarding the potential effects of wind energy development on habitat use by the lesser prairie-chicken (Service 2022, pp. 29–34).

Noise effects to prairie-chickens have been recently explored as a way to evaluate potential negative effects of wind energy development. For a site in Nebraska, wind turbine noise frequencies were documented at less than or equal to 0.73 kilohertz (kHz) (Raynor et al. 2017, p. 493), and reported to overlap the range of lek-advertisement vocalization frequencies of lesser prairie-chicken, 0.50–1.0 kHz. Female greater prairie-chickens avoided wooded areas and row crops but showed no response in space use based on wind turbine noise (Raynor et al. 2019, entire). Additionally, differences in background noise and signal-to-noise ratio of boom chorus of leks in relation to distance to turbine have been documented, but the underlying cause and response needs to be further investigated, especially since the study of wind energy development noise on grouse is almost unprecedented (Whalen et al. 2019, entire).

The effects of wind energy development on the lesser prairie-chicken must also take into consideration the influence of the transmission lines critical to distribution of the energy generated by wind turbines. Transmission lines can traverse long distances across the landscape and can be both above ground and underground, although the vast majority of transmission lines are erected above ground. Most of the impacts to lesser prairie-chicken associated with transmission lines are with the aboveground systems. Support structures vary in height depending on the size of the line. Most high-voltage power line towers are 98 to 125 ft (30 to 38 m) high but can be higher if the need arises. Local distribution lines, if erected above ground, are usually much shorter in height but still contribute to fragmentation of the landscape.

The effect of the transmission line infrastructure is typically much larger than the physical footprint of transmission line installation. Information on grouse and power lines is relatively limited with more studies needed. The available data includes a range of reported impacts (see Nonne et al. 2013, entire; Dinkins et al. 2014, entire; Hansen et al. 2016, entire; Jarnevich et al. 2016, entire; Londe et al. 2019, entire; LeBeau et al. 2019, entire; Kohl et al. 2019, entire; and England and Robert 2021, entire). Transmission lines can indirectly lead to alterations in lesser prairie-chicken behavior and space use (avoidance), decreased lek attendance, and increased predation on lesser prairie-chicken. Transmission lines, particularly due to their length, can be a significant barrier to dispersal of prairie grouse, disrupting movements to feeding, breeding, and roosting areas. Both lesser and greater prairie-chickens avoided otherwise usable habitat near transmission lines and crossed these power lines much less often than nearby roads, suggesting that power lines are a particularly strong barrier to movement (Pruett et al. 2009, pp. 1255–1257). Because lesser prairie-chicken avoid tall vertical structures like transmission lines and because transmission lines can increase predation rates, leks located in the vicinity of these structures may see reduced attendance by new males to the lek, as has been reported for sage-grouse (Braun et al. 2002, pp. 11–13).

Decreased probabilities of use by lesser prairie-chicken were shown with the occurrence of more than 0.09 mi (0.15 km) of major roads, or transmission lines within a 1.2-mi (2-km) radius (Sullins et al. 2019, unpaged). Additionally, a recent study corroborated numerous authors' (Pitman et al. 2005; Pruett et al. 2009; Hagen et al. 2011; Grisham et al. 2014; Hovick et al. 2014a) findings of negative effects of power lines on prairie grouse and reported a minimum avoidance distance of 1,925.8 ft (587 m), which is similar to other studies of lesser prairie-chickens (Plumb et al. 2019, entire). LeBeau et al. (2020, p. 24) largely aggregated their findings of wind turbines and a transmission line on lesser prairie-chicken into effects of ''wind energy infrastructure,'' but specifically noted evidence that females selected home ranges farther from transmission lines. Using a definition for transmission powerlines that included powerlines transmitting >69 kilovolts, indicated that taller anthropogenic structures (*i.e.,* transmission powerlines and towers) generally had larger estimated avoidance response distances of all the studied features, but also large regional variation (Peterson et al. 2020, p. 9). They found largest estimated avoidance response of 5.6 mi (9 km) in Northwest Kansas, and the smallest in Oklahoma at approximately 1.8 mi (3 km). Effects from anthropogenic features, including power lines, varied by region, and the degree of effect often depended on the presence of other anthropogenic features (Patten et al. 2021, entire).

As part of our geospatial analysis, we calculated the amount of otherwise usable land cover for the lesser prairie-chicken that has been impacted (both direct and indirect impacts) by wind energy development in the current analysis area of the lesser prairie-chicken. We used an impact radius of 5,906 ft (1,800 m) for indirect effects of wind turbines and 2,297 ft (700 m) for indirect effects of transmission lines. For details regarding the establishment of the impact radius, see appendix B, part 2C, of the SSA report (Service 2022). Within our analysis area, the following acreages have been identified as impacted due to wind energy development: about 2 percent of the total area in the Short-Grass/CRP, Mixed-Grass, and Shinnery Oak Ecoregions; and no impacts of wind

magnitude of actual future declines is unlikely to be as low as some modeling tools indicate (Service 2022, table 4.10). Most positive population growth calculations were derived from 2014–2016 (Hagen et al. 2017, Supplemental Information; Service 2022, table 4.10), where estimates indicated populations have increased. However, we caution that any analysis using growth rates based upon short-term data sets can be problematic as they are very sensitive to the starting and ending points in the estimates. Additionally, these growth rates are accompanied by relatively large margins of error.

Estimates based on aerial surveys over the past 10 years have indicated a rangewide fluctuating population beginning with an estimated 30,682 (90 percent CI: 20,938–39,385) individuals in 2012 to an estimated 26,591 (90 percent CI: 16,321–38,259) individuals in 2022. Included within this timeframe was a population low of 16,724 (90 percent CI: 10,420–23,538) individuals in 2013. We caution against drawing inferences from point estimates based upon these data due to low detection probabilities of the species leading to large confidence intervals. We also caution that trend analyses from short-term data sets are highly sensitive to starting and ending population sizes. For example, if you use 2012, the first year of available rangewide survey data, as the starting point for a trend analysis, it may appear that populations are relatively stable, but during the years of 2010–2013, the range of the lesser prairie-chicken experienced a severe drought and thus lesser prairie-chicken populations were at historic lows. If the data existed to perform the same analysis using the starting point as 2009, then the results would likely show a decreasing population trend.

The future risk of extinction of the lesser prairie-chicken has been evaluated using historical ground surveys (Garton et al. 2016, pp. 60–73). This analysis used the results of those surveys to project the risk of lesser prairie-chicken quasi-extinction in each of the four ecoregions and rangewide over two timeframes, 30 and 100 years into the future. For this analysis, quasi-extinction was set at effective population sizes (demographic N_e) of 50 (populations at short-term extinction risk) and 500 (populations at long-term extinction risk) adult breeding birds, corresponding to an index based on minimum males counted at leks of ≤85 and ≤852, respectively (Garton et al. 2016, pp. 59–60). The initial analysis using data collected through 2012 was reported in Garton et al. (2016, pp. 60–73), but it has since been updated to include data collected through 2016 (Hagen et al. 2017, entire). We have identified concerns in the past with some of the methodologies and assumptions made in this analysis, and the challenges of these data are noted in Zavaleta and Haukos (2013, p. 545) and Cummings et al. (2017, pp. 29–30). While these concerns remain, this work represents one of the few attempts to project risk to the species across its range, and we considered it as part of our overall analysis and recognize any limitations associated with the analysis.

Results were reported for each analysis assuming each ecoregion is functioning as an independent population and also assuming there is movement of individuals between populations (Service 2022, table 4.11; table 4.12). The results suggest a wide range of risks among the ecoregions, but the Sand Sagebrush Ecoregion consistently had the highest risks of quasi-extinction and the Short-Grass/CRP Ecoregion had the lowest. This analysis was based only on simulating demographic variability of populations and did not incorporate changing environmental conditions related to habitat or climate.

Summary of Comments and Recommendations

In the proposed rule published on June 1, 2021 (86 FR 29432), we requested that all interested parties submit written comments on the proposal by August 2, 2021. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. We published newspaper notices inviting general public comment in the USA Today. We held virtual public hearings on July 8, 2021, and July 14, 2021. On June 11, 2021, we received a request to extend the public comment period. On July 30, 2021, we published a notice extending the comment period for an additional 30 days to September 1, 2021 (86 FR 41000). During the public comment period, we received 32,126 comments, including 3 bulk comments with a total of 31,710 form letters.

State agencies, industry groups, and other commenters submitted additional information and data during the public comment period. We received information on conservation efforts, renewable energy projects, new survey data, threats, suggestions related to recovery planning, monitoring efforts, general information related to mitigation efforts, and more. All substantive information received during the comment periods has either been incorporated into our SSA, directly into this final determination, or is addressed below.

Peer Reviewer Comments

As discussed in Supporting Documents above, we received comments from four peer reviewers. We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the information contained in the SSA report. The peer reviewers generally concurred with our methods and conclusions and provided support for thorough and descriptive narratives of assessed issues, additional information, clarifications, and suggestions to improve the final SSA report. Peer reviewer comments are addressed in the following summary and were incorporated into the final SSA report as appropriate.

Comment 1: One peer reviewer suggested that we consider adding to the SSA report a statement that the percent reduction of habitat and the percent reduction in population more or less parallel (or pace) each other. They stated that pointing this out might emphasize that improvements in actions that restore habitat should result in more birds.

Our response: While we agree that there is a direct relationship between habitat availability and population trends, the location of additional habitat losses or gains will dictate the magnitude of population response to those changes. Thus, while we can conclude there is a direct relationship between population trends and habitat availability, we cannot conclude that a given percent reduction of habitat will result in a given percent reduction in population abundance.

Comment 2: One peer reviewer suggested that we were too optimistic regarding the persistence of lesser prairie-chicken in the Short-Grass Prairie/CRP Ecoregion. The reviewer points out the lesser prairie-chicken in that ecoregion are wholly dependent on CRP and minor landscape changes can affect lesser prairie-chicken persistence.

Our response: Our SSA is based on the best available science. In our SSA report, we state that the Short-Grass Prairie/CRP Ecoregion represents the most resilient ecoregion of the four evaluated based upon the large number of birds present. The existing populations of lesser prairie-chicken in this ecoregion are largely dependent upon CRP, a point which we acknowledge in the SSA report, and in the SSA report we project additional habitat loss to occur within the future. All of these points were included in our SSA analysis.

Comment 3: One peer reviewer suggested that juniper twig blight, one of several possible species of fungi, has been decimating eastern red cedar in some areas and could potentially reverse some of the woody encroachment.

Our response: We reviewed the available information in our files and found no documentation of extensive areas of eastern red cedar decimated by any fungi or other diseases. Two locations where this fungus exists are significantly east of lesser prairie-chicken range. Additionally, as an example, one of the fungi, Kabatina (*Kabatina juniperi*), requires specific weather conditions, limiting the expectation of extensive spread of this fungus. This context makes widespread and sustained removal of eastern red cedar by fungi infection from invaded grasslands or prairies unlikely within the range of the lesser prairie-chicken.

Comment 4: One peer reviewer suggested there is no evidence to support available lesser prairie-chicken habitat has been reduced by 80–90 percent, citing Spencer et al. 2017.

Our response: The SSA report summarizes the best available scientific information related to this point. The lesser prairie-chicken was once distributed widely across the Southern Great Plains, and currently occupies a substantially reduced portion of its presumed historical range (Rodgers 2016, p. 15). There have been several estimates of the potential maximum historical range of the lesser prairie-chicken (*e.g.,* Taylor and Guthery 1980a, p. 1, based on Aldrich 1963, p. 537; Johnsgard 2002, p. 32; Playa Lakes Joint Venture 2007, p. 1) with a wide range of estimates on the order of about 64 to 115 million ac (26 to 47 million ha). The more recent estimate of the lesser prairie-chicken encompasses an area of approximately 115 million ac (47 million ha). Presumably, not all of the area within this historical range was evenly occupied by lesser prairie-chicken, and some of the area may not have been suitable to regularly support lesser prairie-chicken populations (Boal and Haukos 2016, p. 6). However, experts agree that the current range of the lesser prairie-chicken has been significantly reduced from the historical range at the time of European settlement, although there is no consensus on the exact extent of that reduction as estimates vary from greater than 90% reduction (Hagen and Giesen 2005, unpaginated) to approximately 83% reduction (Van Pelt et al. 2013, p. 3). We refer to the context of the entire estimated historical range, while Spencer et al. 2017 only addresses areas present in the recent delineation of the EOR in Kansas from the 1950s to 2013.

Comment 5: One reviewer suggested we used inappropriate representation of lesser prairie-chicken historical range and suggested that there are areas included within the historical range included in the SSA report that were never occupied by the lesser prairie-chicken.

Our response: We used the best available information to characterize the historical range of the lesser prairie-chicken, including peer-reviewed publications and the map produced and used by the State fish and wildlife agencies and cited in nearly all scientific publications discussing the historical range (Service 2022, figure 2.2). Additionally, we acknowledge caveats associated with the historical ranges including statements such as ''Presumably, not all of the area within this historical range was evenly occupied by [lesser prairie-chicken], and some of the area may not have been suitable to regularly support [lesser prairie-chicken] populations.'' The reviewer did not suggest a source that would better represent the historical range of the lesser prairie-chicken.

Comment 6: One reviewer suggested we inappropriately assumed that once land is converted to cropland those acres are no longer habitat.

Our response: Lesser prairie-chickens are a grassland obligate species. We do not assume that cropland is not habitat, but rather apply the information available in the scientific literature that indicates that cropland does not provide for the full life-history needs of the species. Additionally, once cropland exceeds 10 percent of the landscape, lesser prairie-chicken populations begin to decline, in large part due to the loss of nesting habitat. As discussed within the SSA report, we considered that cropland may have some limited value for opportunistic foraging but does not support vegetative structure and composition necessary to fulfill all the life-history needs of the species.

Federal Agency Comments and Comments From Tribes

We did not receive any comments from Federal agencies or from Tribes.

Comments From States

Comment 7: Several State agencies and one commenter argued that rare and endangered species are better managed at the State level than the Federal level, and that the Service lacks the resources and relationships to properly manage the species.

Our response: The Act requires the Service to make a determination using the best available scientific and commercial data after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation to protect such species. We appreciate the interest in lesser prairie-chicken conservation and look forward to continuing our coordination with State agencies as we begin recovery planning and implementation for the lesser prairie-chicken.

Comment 8: One State and one commenter stated the Service did not account for habitat quality improvements through enhancements in the characterization of past and ongoing conservation actions in the SSA.

Our response: Throughout the SSA process, the Service worked with the States and other partners to compile and evaluate the best available data to inform our decision with regard to the status of the lesser prairie-chicken. This included working with our conservation partners to ensure we accurately characterized existing conservation efforts for the species and projecting the benefits of these efforts into the future. Within chapter 3 of the SSA report, we detail past and current conservation efforts, including enhancement efforts. While projecting the benefits of conservation efforts into the future, we include projections that account for those efforts to enhance existing habitat for the lesser prairie-chicken, which are summarized in chapter 4, table 4.8 of the SSA report (Service 2022).

Comment 9: As a followup to Comment 8, a commenter asked for clarification on the implications of not being able to assess habitat quality (and inclusion of degraded areas) in the spatial analysis and how those implications might have affected our decision.

Our response: Spatial data do not exist at the scale and resolution needed to adequately evaluate the condition of the vegetative structure and composition of the landscape. This impacted our spatial analysis because to accurately evaluate habitat availability for the lesser prairie-chicken, one would need to identify areas that are in grassland or shrubland that could support the species and then evaluate the vegetative composition and structure of those areas to determine if the area has been degraded and to what degree. Many areas that remain grassland do not have either the vegetative composition or structure to provide for habitat for the lesser prairie-chicken; unfortunately, no spatial data exist that would allow for a